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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/074,765
Filing Date: February 12, 2002
Appellant(s): BANERJI ET AL.

Georgann S. Gruneback, Reg. No. 33,179
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 05/31/2007 appealing from the Office action mailed 01/30/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 5,414,469	Ganzales et al.	05-1995
US 6,700,933	Wu et a.	03-2004
US 5,414,780	Carnahan	05-1995

US 5,719,986	Kato et al.	02-1998
US 5,680,129	Weinberger et al.	10-1997
US 5,771,239	Moroney et al.	06-1998
US 6317461	Chujoh et al.	09-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-3, 5, 7, 12, 14, and 16-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Gonzales (US 5,414,469).

Re claims 1, 14, 16-19, and 21-23, Gonzales discloses a video compression system for carrying out a method, wherein the video compression system comprises:

means (fig. 1) for grouping video frames that are between consecutive I-frames (col. 3) into a video data set as a plurality of data sequences (GOP n and GOP n+1 of fig. 1);

means (Transform Unit of fig. 11; see also Video Input, DCT 8x8, DCR 4x4, DCT 2x2 of fig. 12b) for splitting the video data set into a plurality of homogeneous files as a plurality of individual data sequence (figs. 5 and 6, note Full Resolution MB, ¼ Resolution MB...) ; and

means (Entropy Coding Unit of fig. 11; see also DCT 8x8, DCT 4x4, DCT 2x2 of fig. 12b) for individually compressing each of the homogeneous files as each of the individual sequence;

means (Multiplexor of fig. 11) for multiplexing the individually compressed files into a bit stream (Compressed Video as a bitstream of fig. 11) .

Re claims 2 and 20, Gonzales further discloses method according to claim 1, wherein the video frames include P-frames and B-frames (Figure 5 shows N= DISTANCE BETWEEN I-FRAMES and N= DISTANCE BETWEEN P-FRAMES, OTHERS = B-FRAMES).

Re claim 3, Gonzales further discloses said splitting includes storing mode information of the video data set and motion components in separate files (MCP 16x16, MCP 8x8, MCP 4x4, and Motion Estimation 16x16 of fig. 12b, see also Transform Unit of fig. 11).

Re claim 5, Gonzales wherein said splitting includes storing B-frame components of the video data set and P-frame components of the video data set in separate files (Transform Unit of fig. 11).

Re claim 7, Gonzales further wherein said splitting includes storing different color components of the video data set in different files (fig. 6, see also Transform Unit of fig. 11).

Re claim13, Gonzales further discloses wherein said homogeneous files have similar statistical properties (fig. 11).

3. Claims 1-3, 11-14, and 16-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (US 6,700,933).

Re claims 1, 14, 16-19, and 21-23, Wu discloses a video compression system for carrying out a method, wherein the video compression system comprises:

means (150, 152 of fig. 8, Note P frames in GOP that are between I-frames (158 of fig. 8)) for grouping video frames that are between consecutive I-frames into a video data set as a plurality of data sequences (P-Frames in GOP 154 of fig. 8);

means (fig. 9) for splitting the video data set into a plurality of homogeneous files (Enhancement layer and Based Layer, each layer is file of fig. 9, see also fig. 19) as a plurality of individual data sequence (206, P-Frame of fig. 9)) ; and

means (226(1)-226(n) of fig. 9), see also (506, 508, 509 of fig. 19) for individually compressing each of the homogeneous files as each of the individual sequence;

means (the process can be generally described as the combined operations of the base layer encoder (506 of fig. 19), the low quality enhancement layer encoder (508 of fig. 19), and the high quality enhancement layer encoder (509 fig. 19)) for multiplexing (combining) the individually compressed files into a bit stream .

Re claims 2 and 20, Wu further discloses wherein the video frames include P-frames and B-frames (MPEG standard has P frames and B frames in GOP).

Re claim 3, Wu further discloses wherein said splitting includes storing mode information of the video data set and motion components in separate files (2-0, 206, 304 of fig. 19).

Re claim 5, Wu further discloses wherein said splitting includes storing B-frame components of the video data set and P-frame components of the video data set in separate files (206 of fig. 9).

Re claims 11-13, Wu further discloses wherein said compressing includes bit plane encoding quantized transform coefficients obtained from the video data set; wherein said

compressing includes performing a run-length encoding of bit planed encoded coefficients; wherein said homogeneous files have similar statistical properties (562, 582 ... of fig. 19).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 6,700,933) in view of Carnahan (US 5,414,780).

Re claims 4 and 16, Wu teaches splitting video serial into panels and storing the B components and P components in separate files (Frame Reordering delay 215 of fig. 2) but not include storing mode information of the video data set and motion components that includes storing horizontal components of the video data set and vertical components of the video data set in separate files as claimed.

However, Carnahan teaches storing mode information of the video data set (horizontal and vertical vectors) and motion components NxM horizontal and vertical image data block include vectors) that include storing horizontal components of the video data set and vertical components of the video data set in separate files (col. 3, line 49-col. 4, line 3) and performing a run-length encoding of bit planed encoded coefficients (col. 11 and 12, note TRANSFORMER

(52), QUANTIZER (54), and CODER (56) performs transforming, quantizing and nm-length coding the video data set).

Therefore, taking the teachings of Wu and Carnahan as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the step of storing the mode information and motion components into the separate files (memories) and the transformer, quantize and coder of Carnahan into the encoder of Gordon for the same purpose of run-length coding the transformed, quantized video data set that retrieves from the separate files.

Doing so would provide the quantization process reduces the magnitude or number of bits of each quantized word and the coder circuit to implement coding in an efficient manner.

6. Claims 6, 7, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 6,700,933) in view of to claim 1 and in view of Kato et al. (US 5,719,986).

Re clam Claims 6, 7, and 16, Wu teaches the encoder for encoding the video sequence into the MPEG compliant transport stream using predicted frame information but not include storing mode 3 B- frame components of the video data set and mode 0, 1, and 2 B-frame components of the video data set in separate files and different color components of the video data set in different files as claimed.

However, Kato teaches storing mode 3 B- frame components of the video data set (61 of fig. 3, note intra prediction for B-frame and mode 0, 1, and 2 B-frame components (14, 23 of fig. 3, note forward prediction, backward prediction, and bi-directional prediction) of the video data set in separate files and storing different color components of the video data set in different files (12 of fig. 3, see also fig. 5C, note Y, Cb and Cr are different color components).

Taking the teachings of Gordon and Kato as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings intra-prediction mode for B- frame having forward, backward, and bi-directional prediction of Kato into the encoder of Wu to improve efficiency of encoding. Doing so would provide to a decoder a higher quality image.

7. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 6,700,933) in view of to claim 1, and further in view of Weinberger et al (US 5,680,129).

Re claims 8 and 16, Wu fails particularly teach mapping negative values in one of the homogeneous files into positive values, and file header as claimed.

However, Weinberger teaches mapping negative values in one of the homogeneous files into positive values (col. 15, lines 59-64), and file header. Therefore, taking the teachings of Wu and Weinberger as a whole, it would have been obvious to one of ordinary skill in the art to modify the technique of mapping negative values into one of homogeneous files into positive values into the encoder of Gordon to improve performance of encoding color image. Doing so would result in a more efficient compression of the image.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 6,700,933) in view of to claim 1 and in view of Moroney et al. (US 5,771,239).

Re claims 9 and 10, Wu does not particularly teach applying a grammar based code and a YK algorithm as claimed.

However, Moroney teaches the MPEG coding technique uses a formal grammar ("syntax") and a set of semantic rules for the construction of bitstreams to be transmitted,

wherein the grammar encoding would obviously have YK algorithm to encode the homogeneous files.

Therefore, taking the combined teachings of Moroney and Wu as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Moroney into the method of Wu to improve coding efficiency.

9. Claims 15 and 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 6,700,933) as applied to claims 1 and 14, and in view of Chujoh et al. (US 6,317,461).

Claim 15, Wu does not particularly teach prefixing a corresponding header to each of the separate files, said header indicating a size of a corresponding separate file as claimed.

However, Chujoh teaches prefixing a corresponding header to each of the separate files, said header indicating a size of a corresponding separate file (figs. 41A, 41B, 42A and 42B). Therefore, taking the teachings of Chujoh and Wu as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Chujoh into system of Wu for prefixing the corresponding header of each layer (file) so that the decoder to easily detect the prefixed header during decoding. Doing so would allow the decoder to easily decode the high quality image.

(10) Response to Argument

A. Claims 1-3, 5, 7, 12, 14, and 16-23 are anticipated by Gonzales et al.

The appellant argued that Gonzales fails to disclose " splitting the video data set consisting of non-intra video frames into a plurality of data sequences", page 4 of the appeal

brief, and "grouping video frames that are only between consecutive I- frames into a video data set", page 5 of the appeal brief.

The examiner respectfully disagrees with that appellant. It is submitted that Gonzales discloses splitting (See Transform Unit of fig. 11, see also fig. 12b for details) the video data set (Digital Video Input comprises GOPn and GOP n+1, fig. 1, wherein the video data set is considered as each Group Of Picture (GOP) in the Digital Video Input) consisting of non-intra video frames (col. 3, lines 43-44, each GOP must start with an I-picture/frame, which is non-intra picture/frame as inter picture/frame, and additional I-pictures can appear within the GOP) into a plurality of data sequences (DCT (8x8), DCT (4x4), DCT (2x2) of fig. 12b). Gonzales further discloses grouping video frames (B, B, P, B, B, P, B, B pictures/frames of fig. 5) that are only between consecutive I-frames (I at beginning and I at the end of GOP, fig. 5, when the distance between I-frames N = 9, and distance between P-frames M = 3; the B, B, P, B, B, P, B, B pictures/frames are only between consecutive I-frames) of a video data set (each GOP of fig. 1). In view of the discussion above, Gonzales anticipates the claimed invention.

The appellant argued that every word in a claim must be considered in judging the patentability of that claim against the prior art, and the rejection fails to consider the crucial term "only" as claimed, page 6 of the appeal brief.

The examiner respectfully disagrees with the appellant. It is submitted that Gonzales clearly shows grouping the video frames that are only between consecutive I frames into a video data set (fig. 5, Note B, B, P, B, B, P, B, and B pictures/frames are between consecutive I-pictures/frames and the term only is inherently included when grouping the video frames is set, N=9, M=3 of fig. 5).

It is acknowledged that Gonzales does not describe a method identical to the disclosed by Appellant. However, claims are to be given their broadest reasonable interpretation during prosecution, and the scope of a claim cannot be narrow by reading disclosed limitations into the claim. See In re Morris, 127 F. 3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); In re Zlet, 893, F. 2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. 1989); In re Prater, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969).

It is noted that the law of anticipation does not require that a reference "teach" what an applicant's disclosure teaches. Assuming that a reference is properly "prior art", it is only necessary that the claims "read on" something disclosed in the reference, i. e., all limitations of the claim are found in the reference, or "fully met" by it. Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983).

In view of the discussion above, Gonzales clearly anticipates the claimed invention.

B. Claims 1-3, 11-14, 16-23 are anticipated by Wu et al.

The appellant argued that that Wu fails to disclose the feature of "grouping frame that are only be between consecutive I-frames into a video data set", and "splitting the video data set consisting of non-intra video frames into a plurality of data sequences", pages 6-7 of the appeal brief.

The examiner respectfully disagrees with the appellant. It is submitted that Wu discloses the MPEG standard (MPEG-1, MPEG-2, MPEG-4) that is already grouping video frames (I, P and B pictures) into a video data set (GOP), wherein the video frames are inherently only between consecutive I-frames (col. 1, lines 35-38, steps 154 of fig. 8); wherein the GOP

consists of non-intra frames that are verified (step 158 of figure 8). According MPEG standard, the non-intra frames (B and P pictures) are already grouped between consecutive inter-frames (I-frames) into a video data set (Group Of Picture, GOP). Therefore, the video frames (B and P frames) must be only between the I-frames. Wu further discloses spitting the video data set (GOP) consisting of non-intra video frames (I-frames, 300 of fig. 10) into a plurality of data sequences (302, 306, 310 of fig. 10, Note each layer is considered as a data sequence, see also 80' of fig. 19). In view of the discussion above, Wu anticipates the claimed invention.

C, D, E, F, and G:

The appellant argued that the claimed limitations are not rendered obvious by the combinations of Wu et al. and Carnahan; Wu et al. and Moroney et al.; Wu et al. and Chujoh et al.; Wu et al. and Kato et al.; and Wu et al. and Weinberger, pages 7-9 of the appeal brief.

The examiner respectfully disagrees with the appellant. It is submitted that Wu teaches splitting video serial into panels and storing the B components and P components in separate files (Frame Reordering delay 215 of fig. 2) and Carnahan teaches storing mode information of the video data set (horizontal and vertical vectors) and motion components NxM horizontal and vertical image data block include vectors) that include storing horizontal components of the video data set and vertical components of the video data set in separate files (col. 3, line 49-col. 4, line 3) and performing a run-length encoding of bit planed encoded coefficients (col. 11 and 12, note TRANSFORMER (52), QUANTIZER (54), and CODER (56) performs transforming, quantizing and nm-length coding the video data set). It would have been obvious to one of ordinary skill in the art to incorporate the step of storing the mode information and motion components into the separate files (memories) and the transformer, quantize and coder of

Carnahan into the encoder of Gordon for the same purpose of run-length coding the transformed, quantized video data set that retrieves from the separate files to reduce the magnitude or number of bits of each quantized word and the coder circuit to implement coding in an efficient manner.

Wu teaches the encoder for encoding the video sequence into the MPEG compliant transport stream using predicted frame information. Kato teaches storing mode 3 B- frame components of the video data set (61 of fig. 3, note intra prediction for B-frame and mode 0, 1, and 2 B-frame components (14, 23 of fig. 3, note forward prediction, backward prediction, and bi-directional prediction) of the video data set in separate files and storing different color components of the video data set in different files (12 of fig. 3, see also fig. 5C, note Y, Cb and Cr are different color components). Therefore, one of ordinary skill in the art would obvious incorporate the teachings intra-prediction mode for B- frame having forward, backward, and bi-directional prediction of Kato into the encoder of Wu to improve efficiency of encoding.

Wu teaches values in one of the homogeneous files into positive values, and file header. However, Weinberger teaches mapping negative values in one of the homogeneous files into positive values (col. 15, lines 59-64), and file header. Therefore, one of ordinary skill in the art would obviously modify the technique of mapping negative values into one of homogeneous files into positive values into the encoder of Gordon to improve performance of encoding color image.

Wu suggests the modification that would be added and Moroney teaches the MPEG coding technique uses a formal grammar ("syntax") and a set of semantic rules for the construction of bitstreams to be transmitted, wherein the grammar encoding would obviously

have YK algorithm to encode the homogeneous files. Therefore, one of ordinary skill in the art to incorporate the teachings of Moroney into the method of Wu to improve coding efficiency.

Wu teach the MPEG standard that would have a header and Chujoh teaches prefixing a corresponding header to each of the separate files, said header indicating a size of a corresponding separate file (figs. 41A, 41B, 42A and 42B). Therefore, one of ordinary skill in the art would obviously incorporate the teachings of Chujoh into system of Wu for prefixing the corresponding header of each layer (file) so that the decoder to easily detect the prefixed header during decoding with the high quality image.

(11) Evidence Appendix

No evidence appendix has been submitted.

(12) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Tung Vo

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